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Method for inserting data into a timer for a video recording device

5 Field of the invention

This invention relates to a method for inserting additional data, e.g. program title, into a timer for a video recording device.

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Background

When a number of timers are set up in a video recording device, e.g. Personal Video Recorder (PVR), it is convenient for the user if the list of timers contains additional information, e.g. the titles of the programs to be recorded. This information may be entered interactively, e.g. by using an on-screen keyboard, or may be obtained e.g. from an Electronic Program Guide (EPG) which is an additional service of most video content providers. However, some video content providers do not offer said service, or offer it for additional costs so that some customers decide not to acquire the service. In these cases channel, date and time, or maybe a kind of code number, must be entered when setting up the timer of a video recorder. Therefore, when the pre-programmed timers are listed on the screen, the titles and other additional data are not displayed, only channel, date and time. When the list is long, e.g. comprising a number of episodes of various series or other recurring programs, it is difficult to overview.

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Further, in almost all publicly used video standards there is a possibility to transmit additional information in the vertical blanking interval (VBI), like teletext in Europe or Closed Captioning in the U.S. Various devices exist for extracting and decoding such information. In some cases also the title of the currently transmitted program is included in this information, e.g. for the NTSC standard it may be transmitted in line 21 according to the EIA/CEA-608-B standard.

Summary of the invention

The problem to be solved by the invention is that program information, e.g. the program title or program type, is missing for recurring timers if a video recording device has no access to an EPG. This problem is solved by the method disclosed in claim 1. An apparatus using this method is disclosed in claim 7.

According to the invention, additional information data regarding a program is extracted from the VBI, while a program being part of a series is recorded, and this data is added to the timer information for all future parts of this series, so that the data may be displayed when the pre-programmed timers are listed. Whether or not a pre-programmed timer is part of a series of timers, can be detected e.g. by the way it was programmed, namely as a recurring timer.

Advantageous embodiments of the invention are disclosed in the dependent claims, the figures and the following detailed description.

Brief description of the drawings

Exemplary embodiments of the invention are described with reference to the accompanying drawings, which show in

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Fig.1 an exemplary system for extracting additional data from the VBI;

Fig.2 an on-screen display for detailed timer information;

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Fig.3 a list of timers without program names; and

Fig.4 a list of timers with program names added.

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Detailed description of the invention

According to the invention, additional program information, e.g. the program title, is extracted from the information received in the VBI, and inserted into the list of timers if a program is being recorded due to a recurring timer. An exemplary block diagram of a digital system using the inventive method is depicted in Fig.1. An NTSC input signal 1 is received and decoded in a decoder 2 into a CCIR656 digital video stream. Then the additional information from line 21 is separated from said digital video stream, and decoded in a slicer 3. The resulting audio and video (AV) stream is sent to an MPEG (Motion Picture Expert Group) encoder 4, and the MPEG encoded signal is stored on a digital storage medium 5, e.g. hard disk drive, while the additional information decoded by the slicer 3 is processed by a processing unit 6. The

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processing unit 6 detects e.g. the program title and sends it to the storage medium 5, which stores the information in a file associated with the recorded AV stream. For reproduction of said AV stream the recorded data are read from the storage medium 5 and then transferred to an MPEG decoder 7. The decoded AV stream is transferred to a display control unit 8 that converts the AV stream and the data read from the file associated with said AV stream into display data. The information about how to convert the data from said file to pixels of the display is received from a graphics generator, which may be implemented as part of the processing unit 6. Further, the display control unit 8 encodes the display data and provides an NTSC formatted signal 9 for output on a TV.

When details of a recurring timer are displayed, the screen presented to the user may look like shown in Fig.2. It displays an identifier 11 for the current timer and the information entered by the user, namely channel and time 10 of the program to be recorded, and the information that this is a recurring timer 12, e.g. daily or weekly. The identifier 11 may be used as default title string in a list of timers.

Fig.3 shows a screen displaying the list of timers, after programming a recurring timer 21, but before recording for the first time a program relating to said recurring timer. The display contains a default title string 21, the day 22, time 23 and channel 24 of the next timer instance, and various other timers 26 with their respective data. In this example recurring timers are denoted by a day display 22, while non-recurring timers are denoted by a day-month display 25.

According to the invention, the list of timers may be modified as shown in Fig.4 when for the first time a program relating

to the recurring timer 21 is recorded. The list may still display day 32, time 33 and channel 34 of the recurring timer 31, and other timers 35, but the default title string for the recurring timer 31 is replaced with the actual program title
5 extracted from the VBI.

In one embodiment of the invention the described insertion of extracted additional data is performed only if said additional data are not already stored for a recurring timer, e.g. when
10 the recurring timer records for the first time. In another embodiment of the invention the extracted additional data are inserted whenever a program is recorded due to a recurring timer, possibly overwriting previously inserted information. In a third embodiment of the invention the stored data of the
15 recurring timer may be compared to the additional data that are being received with the currently recorded program, and modified only if they have changed.

Alternatively to using a single line for a recurring timer
20 when displaying a list of timers, it is possible to list several or all instances of a recurring timer. In this case the additional data may be extracted as described before, and displayed with every displayed instance of the recurring timer.

25 Advantageously, the described method for adding information to a recurring timer may be used in video or AV recording devices, but also in other recording devices that can be programmed using recurring timers and that receive additional
30 information while recording. The additional information may be e.g. program title, program type like sports or children program or program classification, like not being appropriate for children.